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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/330,154	06/11/1999	SUSUMU GOTO	862.2866	9061

5514 7590 06/17/2003

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EXAMINER

VANORE, DAVID A

ART UNIT	PAPER NUMBER
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2881

DATE MAILED: 06/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/330,154

Applicant(s)

GOTO, SUSUMU

Examiner

David A Vanore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-15 and 17-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-15 and 17-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 May 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Note: See attachment at end of Office Action for details regarding recent changes to 35 USC 102 (e).

Claims 1-11, 15-25, and 29-40 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Terashima et al.

Terashima et al. teaches the following :

A charged particle source (Fig. 19 Item IL), an irradiation system for producing an arcuate shaped beam and irradiating said beam onto a mask (Fig. 19 Item IL), a projection optical system comprising a plurality of magnets (Fig. 19 Item 1008, 1010, and 1013), an acquisition means (Fig. 25 Item 1040) which determines image information for correction (Col. 21 Lines 38-61), and a controller to control the currents distributed to the magnets (Fig. 14 Item 40) as recited in claims 1-8, 15-25, and 29-40, where the control system and projection optical system is controlled by the control means to adjust the optical characteristics of the beam and to correct any aberrations in the beams (Col. 13 Lines 35-45 and Col. 20 Line 32-59).

An acquisition system which comprises a mask (Fig. 25 Item 1006) which passes a predetermined beam portion and a measurement system which correlates the position of the

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Regarding claims 12-13, and 26-27, Terashima et al. teaches all limitations as applied above but fails to teach an acquisition system with a substrate having a mark, a measurement unit to detect backscattered electrons, and a substrate stage which moves such that the position of the mark moves across the position where the charged particle beam becomes incident on the substrate stage.

Sakamoto et al. teaches a charged particle lithography apparatus comprising a mark (15, 17) composed of heavy metal (Col. 10 Lines 39-68), a backscattered electron detector, and a scanning stage which scans the position of the mark and determines the incident position of the charge particle beam by correlating the detected backscattered electrons with the stage position (Col. 5 Lines 30-44).

Sakamoto et al. modifies Terashima et al. to produce a charged particle lithography device with a backscattered electron detection and aligning means.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a backscattered electron detection and aligning means because Sakamoto et al. demonstrates that the incorporation of such a means in a charged particle lithography device is well known in the art.

Claims 14 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terashima et al. and Sakamoto et al. as applied above, and in further view of Mori et al.

Terashima et al. and Sakamoto et al. teach all limitations as applied above but fail to teach marks on a substrate shaped as a crisscross or composed of a heavy metal.

Mori et al. teaches a charged particle lithography apparatus comprising alignment marks (M1) in the shape of a crisscross and composed of heavy metal.

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Mori et al. modifies Terashima et al. and Sakamoto et al. to produce a charged particle lithography apparatus having alignment marks on a wafer in the shape of a crisscross and composed of a heavy metal.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide alignment marks in the shape of a crisscross and composed of heavy metal on a substrate in a charged particle lithography apparatus because Mori et al. teaches that such a modification provides the necessary accurate alignment between a mask and semiconductor wafer (Col. 1 Lines 7-12).

Response to Arguments

Applicant's arguments filed upon receipt of the CPA on June 3, 2003 have been fully considered but they are not persuasive.

Applicant asserts on page 16 of the response that the disclosure of Terashima et al. "has nothing to do with correcting or adjusting distortion as in the above discussed claimed features."

Terashima et al. teaches correcting and adjusting the distortion imparted to an electron beam by varying the potential to lens elements to change a principal plane (focal plane) such that image distortions are removed (Col. 13 Lines 31-68). Furthermore, optical systems 1007 and 1008 are magnetic lens which correct beam distortion effects when the applied potential to each is adjusted such that a principal plane (focal plane) is altered (Col. 19 Line 39-Col. 20 Line 14).

Terashima et al. clearly teaches the claimed features of the invention.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A Vanore whose telephone number is 703-306-0246. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached on 703-308-4116. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

dav
June 3, 2003


JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800



Creation date: 10-17-2003
Indexing Officer: AJENKINS2 - ASHUNTA JENKINS
Team: OIPEBackFileIndexing
Dossier: 09330154

Legal Date: 09-24-2003

No.	Dccode	Number of pages
1	EXIN	3

Total number of pages: 3

Remarks:

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